

Serial No. 09/901,746  
January 21, 2004  
Reply to the Office Action dated September 25, 2003  
Page 7 of 11

#### REMARKS/ARGUMENTS

Claims 1, 3-8, 10-15, and 17-21 are pending in this application. By this Amendment, Applicant AMENDS the Specification and claims 1, 3, 4, 8, 10, 14, and 18 and CANCELS claims 2, 9, and 16.

The Examiner objected to the Drawings for allegedly failing to show every feature of the claims. The first grounding conductor layer **14** and the second grounding conductor layer **24** are clearly described, for example, in the paragraph bridging pages 6 and 7 of the originally filed Specification and illustrated in Applicant's **Figs. 1-4**. Accordingly, Applicant respectfully requests reconsideration and withdrawal of this objection to the Drawings.

The Examiner objected to the Specification for allegedly containing minor informalities. Applicant has amended the Specification to correct the minor informalities noted by the Examiner. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the objection to the Specification.

Claims 1-21 were rejected under 35 U.S.C. § 112, first paragraph as allegedly containing subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The Examiner has alleged that the Specification fails to provide support for the feature of "one of the omitted portions is aligned with the through hole and another of the omitted portions is aligned with the microstrip line" recited in Applicant's claim 1. Applicant's claim 1 recited the features of "a through hole formed in said dielectric layers" and "portions of the one of the at least two grounding conductor layers that is closest to said microstrip line are omitted" (emphasis added). That is, Applicant is claiming that a through hole is provided in the dielectric layers and that omitted portions are formed in one of the conductor layers. These features are clearly supported by Applicant's **Fig. 2** and the corresponding discussion of **Fig. 2** in the Specification as originally filed. Applicant's **Fig. 2** clearly shows that in the second grounding conductor

Serial No. 09/901,746  
January 21, 2004  
Reply to the Office Action dated September 25, 2003  
Page 8 of 11

layer 24, two omitted portions (removed portion 32 and through hole 30) are provided. Thus, Applicant respectfully submits that Applicant's **Fig. 2** and the corresponding discussion of **Fig. 2** in the Specification provide support for the feature of "one of the omitted portions is aligned with the through hole and another of the omitted portions is aligned with the microstrip line" recited in Applicant's claim 1.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims under 35 U.S.C. § 112, first paragraph.

Claims 1-21 were rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite.

With respect to claim 1, Applicant has amended claim 1 to more clearly recite which structures are included in the multilayer substrate.

As argued above, Applicant respectfully submits that Applicant's **Fig. 2** clearly shows two omitted portions 30 and 32 in the second grounding conductor layer 24. Thus, Applicant's respectfully submit that the feature of "one of the omitted portions is aligned with the through hole and another of the omitted portions is aligned with the microstrip line" recited in Applicant's claim 1 is clear and definite.

With respect to claims 2, 9, and 16, Applicant has canceled claims 2, 9, and 16 rendering the rejection of these claims moot.

With respect to claims 3, 10, and 17, as argued above, **Fig. 2** clearly shows two omitted portions 30 and 32, two openings defined by omitted portions 30 and 32, and two conductor layers, first grounding conductor layer 14 and the second grounding conductor layer 24.

With respect to claims 4 and 18, as argued above, **Fig. 2** clearly shows two omitted portions 30 and 32. Further, Applicant has not claimed an opening with two openings. Applicant's claims 4 and 18 recite the feature of "said openings have one of a substantially rectangular shape and a substantially square shape" emphasis added. That is, the openings have either a substantially rectangular shape or a substantially square shape.

Serial No. 09/901,746

January 21, 2004

Reply to the Office Action dated September 25, 2003

Page 9 of 11

With respect to claim 8, as argued above, Applicant's **Fig. 2** shows two omitted portions in the second grounding conductor layer **24**: removed portion **32** and through hole **30**. Through hole **30** of the second grounding conductor layer **24** is aligned with the through hole **30** of the second dielectric layer **22**.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1-21 under 35 U.S.C. § 112, second paragraph.

Claims 1-21 were rejected under 35 U.S.C. § 102(b) as being anticipated by Mandai et al. (US Patent 5,227,739). Applicant respectfully traverses the rejection of claims 1-21.

Claim 1 has been amended to recite:

"A resonator comprising:

a multi-layer substrate having an upper and lower surface and including at least two grounding conductor layers and a plurality of dielectric layers, one of the at least two grounding conductor layers being disposed on the lower surface of the multi-layer substrate;

a strip line disposed between the at least two grounding conductor layers;

a microstrip line disposed on the upper surface of said multi-layer substrate; and

a through hole formed in said dielectric layers to connect said strip line to said microstrip line; wherein

portions of the one of the at least two grounding conductor layers that is closest to said microstrip line are omitted; and

**one of the omitted portions is aligned with the through hole and another of the omitted portions is aligned with the microstrip line.**" (emphasis added)

Applicant's claim 1 recites the feature of "one of the omitted portions is aligned with the through hole and another of the omitted portions is aligned with the microstrip line." Applicant's claims 8 and 14 recite features which are similar to the features recited in Applicant's claim 1, including the above emphasized features. With the improved features of claims 1, 8 and 14, Applicant has been able to provide a resonator that minimizes degradation of the Q factor, accurately adjusts the frequency, and has a greatly reduced size and profile thereof (see, for example, the second full paragraph on

Serial No. 09/901,746  
January 21, 2004  
Reply to the Office Action dated September 25, 2003  
Page 10 of 11

page 3 of the Specification).

As argued in the previous Amendment dated July 22, 2003, Mandai et al. clearly teaches in **Fig. 4** that the omitted portions of ground planes 5 and 7 are aligned with **through holes V1**, **NOT** that one of omitted portions is aligned with a microstrip line as recited in Applicant's claim 1, 8, and 14. As argued in the previous Amendment dated December 4, 2002, element 9 of Mandai et al. is clearly taught to be a **conductive land**. That is, element 9 of Mandai et al. would be used as an attachment point for an electrode and **NOT** to be used as microstrip line. Even assuming *arguendo* that element 9 of Mandai et al. could be considered a microstrip line, neither ground planes 5 nor 7 has an omitted portion aligned with the connecting land 9. Thus, Mandai et al. fails to teach or suggest the feature of "one of the omitted portions is aligned with the through hole and another of the omitted portions is aligned with the microstrip line" as recited in Applicant's claim 1 and similarly in Applicant's claims 8 and 14.

The Examiner has alleged in the first paragraph on page 7 of the outstanding Office Action that "Figure 4 of Mandai [et al.] shows a voltage-controlled oscillator (resonator) comprising a microstrip line (9), a strip line (4) and a plurality of omitted portions (openings) (V1). The omitted portions are also through holes." First, as argued above, element 9 of Mandai et al. is a conductive land, **NOT** a microstrip line. Second, the omitted portions of Mandai et al. are **not** through holes. **Fig. 5** clearly shows that the omitted portions of ground planes 5 and 7 surround the through holes **V1**.

The Examiner has further alleged in the first paragraph on page 7 of the outstanding Office Action that "[t]he through holes connect the [connecting land] (9) to the strip line (4). Thus, the omitted portions are aligned with the though hole and the microstrip line." Applicant agrees that the through holes **V1** connect the connecting land 9 to the strip line 4; however, as argued above, the omitted portion of the ground planes 5 and 7 are aligned with the through holes **V1**, **NOT** the connecting land 9.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1, 8, and 14 under 35 U.S.C. § 102(b) as being anticipated by

Serial No. 09/901,746  
January 21, 2004  
Reply to the Office Action dated September 25, 2003  
Page 11 of 11

Mandai et al.

Accordingly, Applicant respectfully submits that none of the prior art of record, applied alone or in combination, teaches or suggests the unique combination and arrangement of elements recited in claim 1, 8, and 14 of the present application. Claims 2-7 depend upon claim 1 and are therefore allowable for at least the reasons that claim 1 is allowable. Claims 9-13 depend upon claim 8 and are therefore allowable for at least the reasons that claim 8 is allowable. Claims 15-21 depend upon claim 14 and are therefore allowable for at least the reasons that claim 14 is allowable.

In view of the foregoing amendments and remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

To the extent necessary, Applicant petitions the Commissioner for a ONE-month extension of time, extending to January 25, 2004, the period for response to the Office Action dated September 25, 2003.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

Date: January 21, 2004

  
Attnorneys for Applicants

Joseph R. Keating  
Registration No. 37,368

Christopher A. Bennett  
Registration No. 46,710

**KEATING & BENNETT LLP**  
10400 Eaton Place, Suite 312  
Fairfax, VA 22030  
Telephone: (703) 385-5200  
Facsimile: (703) 385-5080